IN THE CLAIMS:

Cancel claims 1-20 and insert the following claims.

21. (New) A system for forming an optical waveguide, said system comprising:

a source to direct energy along a path;

a thermal sink with an optical fiber extending therefrom terminating in an end, with said thermal sink configured to dissipate thermal energy propagating along said optical fiber;

a first support, with said end mounted to said support;

a second support with said ferrule resting upon said support;

a platen, with said first and second support resting on said platen; and

a stage, coupled to said platen to move said optical fiber through said path.

23. (New) The system as recited in claim 21 wherein said thermal sink is configure to dissipate said thermal energy radially symmetrically.

24. (New) The system as recited in claim 21 wherein said thermal sink is formed from materials selected from a set consisting essentially of ceramic and polymer.

25. (New) The system as recited in claim 21 wherein said source is a laser.

26. (New) The system as recited in claim 21 wherein said source in an infrared laser.

27. (New) The system as recited in claim 21 wherein said source is a CO_2 laser.

28. (New) The system as recited in claim 21 wherein said source is a pulsed laser.

29. (New) The system as recited in claim 21 wherein said source is a continuous wave laser.

30. (New) The system as recited in claim 21 wherein said beam is source directs a beam along said path with said beam having a width and said optical fiber having a diameter that is greater than said width.

31. (New) A system for forming an optical waveguide, said system comprising:

means for exposing a first region of said optical fiber to thermal energy, with a portion of said thermal energy being transferred to said optical fiber, defining transferred energy;

means for dissipating said transferred energy at a second region of said optical fiber, with said first and second regions being spaced-apart, with thermal energy passing between said first and second spaced-apart regions forming a flow; and

means for maintaining, in said flow, a constant rate of thermal transfer between said first and second spaced-apart regions, thereby providing a graded index of refraction in a portion of said optical fiber located between said first and second spaced-apart regions.

32. (New) The method as recited in claim 32 wherein said means for dissipating further includes means for removing said transferred energy from said optical fiber in a direction that extends radially with respect to said longitudinal axis.

33. (New) The system as recited in claim 31 wherein said means for dissipating further includes means for transferring said transferred energy away from said optical fiber radially symmetrically about said longitudinal axis.

34. (New) The system as recited in claim 31 wherein said means for maintaining further includes means for avoiding variances in said thermal energy being transferred to said optical fiber proximate to said first region and means for avoiding variances in a rate of dissipation of said transferred thermal energy.

35. (New) The system as recited in claim 31 further including means for segmenting said optical fiber proximate to said first region.

36. (New) The system as recited in claim 35 wherein said means for segmenting said optical fiber further includes means for forming a lens proximate to said first region, with said portion extending from said second region, toward said first region, terminating in a lens.